

We claim:

1. A vapor barrier for use in the insulation of buildings, wherein at least a portion of the vapor barrier is formed from a material which has a water vapor diffusion resistance dependent on an ambient humidity, with the proviso that the material, at a relative humidity of an atmosphere surrounding the vapor barrier in the region of 30% to 50%, has a water vapor diffusion resistance ( $s_d$ -value) of 2 to 5 meters diffusion-equivalent air space width, and, at a relative humidity in the region of 60% to 80%, a water vapor diffusion resistance ( $s_d$ -value) which is < 1 meter diffusion-equivalent air space width.
- 10 2. The vapor barrier of claim 1 wherein the vapor barrier is a film-forming composition capable of being sprayed or painted onto the inner walls of a room to form a film on the inner surface of the walls.
- 15 3. The vapor barrier of claim 1 wherein at least a second portion of the vapor barrier is comprised of a carrier material.
4. The vapor barrier of claim 3 wherein the carrier material is selected from the group consisting of particle board, chip board, oriented strand board, plywood paneling, gypsum board, fiber reinforced gypsum board, fiber board, cement board, cementitious wood wool board, calcium silica board, fiber insulation batts or slabs, foam insulation slabs, wall paper, carpet and cloth.
- 20 5. The vapor barrier according to claim 1 wherein the material is a film.
6. The vapor barrier according to claim 5 wherein the film has a thickness of 10  $\mu\text{m}$  to 2 mm.
- 25 7. The vapor barrier according to claim 5 wherein the film has a thickness of 20  $\mu\text{m}$  to 100  $\mu\text{m}$ .
8. The vapor barrier according to claim 5 wherein the material is applied as a coating to a carrier material, the carrier material being such that the characteristics of the vapor barrier are essentially provided by the coating.
- 30 9. The vapor barrier according to claim 5 wherein the material is sandwiched between two layers of a carrier material, the carrier material being such that the characteristics of the vapor barrier are essentially provided by the coating.

10. The vapor barrier of claim 5 wherein the film is formed prior to application to an inner wall surface.

11. The vapor barrier of claim 10 wherein the formed film has a decorative surface structure.

5 12. The vapor barrier of claim 10 wherein the formed film has a printed color pattern.

13. The vapor barrier according to claim 5 wherein the film is chosen from polyamide 6, polyamide 4 or polyamide 3.

10 14. The vapor barrier according to claim 13 wherein the film has a thickness of 10  $\mu\text{m}$  to 2 mm.

15. The vapor barrier according to claim 13 wherein the film has a thickness of 20  $\mu\text{m}$  to 100  $\mu\text{m}$ .

16. The vapor barrier according to claim 13 wherein the material is applied as a coating to a carrier material, the carrier material being such that the 15 characteristics of the vapor barrier are essentially provided by the coating.

17. The vapor barrier according to claim 16 wherein the carrier material is a fiber reinforced cellulose material.

18. The vapor barrier according to claim 13 wherein the material is sandwiched between two layers of a carrier material, the carrier material being such 20 that the characteristics of the vapor barrier are essentially provided by the coating.

19. The vapor barrier according to claim 18 wherein the carrier material is a fiber reinforced cellulose material.

20. The vapor barrier according to claim 1 wherein the material is a polymer coating applied to a carrier material.

25 21. The vapor barrier according to claim 20 wherein a polymer for the polymer coating is selected from the group consisting of polyvinyl alcohol, dispersed synthetic resin, methyl cellulose, linseed oil alkyd resin, bone glue and protein derivatives.

22. The vapor barrier according to claim 20 wherein the carrier 30 material is a fiber reinforced cellulose material.

23. The vapor barrier according to claim 1 wherein the material is applied as a coating to a carrier material, the carrier material being such that the characteristics of the vapor barrier are essentially provided by the coating.

24. The vapor barrier according to claim 23 wherein the carrier material is a fiber reinforced cellulose material.

25. The vapor barrier according to claim 1 wherein the material is sandwiched between two layers of a carrier material, the carrier material being such that the characteristics of the vapor barrier are essentially provided by the coating.

26. The vapor barrier according to claim 25 wherein the carrier material is a fiber reinforced cellulose material.

27. A vapor barrier for use in the insulation of buildings, at least a portion of the vapor barrier formed of a film including a material selected from the group consisting of polyamide 6, polyamide 4 and polyamide 3.

28. The vapor barrier according to claim 27 wherein the film has a thickness of 20  $\mu\text{m}$  to 100  $\mu\text{m}$ .

29. The vapor barrier according to claim 27 wherein the material is applied as a coating to a carrier material, the carrier material being such that the characteristics of the vapor barrier are essentially provided by the coating.

30. The vapor barrier according to claim 29 wherein the carrier material is a fiber reinforced cellulose material.

31. The vapor barrier according to claim 27 wherein the material is sandwiched between two layers of a carrier material, the carrier material being such that the characteristics of the vapor barrier are essentially provided by the coating.

32. The vapor barrier according to claim 31 wherein the carrier material is a fiber reinforced cellulose material.

33. The vapor barrier according to claim 27 wherein the film has a thickness of 10  $\mu\text{m}$  to 2 mm.